

## ABSTRACT

An electric power steering system includes: a band-stop filter 15a having a transfer function  $G_1(s)$  for suppressing resonance, and a phase compensator 15b having a transfer function  $G_2(s)$ . The above function  $G_1(s)$  is represented by an expression  $G_1(s)=(s^2+2\zeta_{11}\omega_1+\omega_1^2)/(s^2+2\zeta_{12}\omega_1+\omega_1^2)$ , where  $s$ : a Laplace operator,  $\zeta_{11}$ : a damping coefficient,  $\zeta_{12}$ : a damping coefficient, and  $\omega_1$ : an angular frequency. On the other hand, the above function  $G_2(s)$  is represented by an expression  $G_2(s)=(s^2+2\zeta_{21}\omega_2+\omega_2^2)/(s^2+2\zeta_{22}\omega_2+\omega_2^2)$ , where  $s$ : a Laplace operator,  $\zeta_{21}$ : a damping coefficient,  $\zeta_{22}$ : a damping coefficient, and  $\omega_2$ : an angular frequency. Furthermore, the above damping coefficients  $\zeta_{21}$ ,  $\zeta_{22}$  satisfy an expression  $\zeta_{21} \geq \zeta_{22} \geq 1$ . Thus, a filter such as a phase compensator may attain a design freedom while preventing the increase of arithmetic load, whereby both the suppression of resonance and a good assist response in a normal steering speed region, for example, may be achieved.